Using cognitive profiling to aid diagnosis and monitor or predict recovery in idiopathic normal pressure hydrocephalus.

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Background

Recent work has highlighted the value of neuropsychological profiling in the differential diagnosis of normal pressure hydrocephalus (NPH) from Alzheimer's disease and other dementias (Iddon et al., 1999; Devito et al., 2005). Iddon et al (1999) also showed that there may be improvement in cognitive function 6 months after shunt treatment. Studies have yet to establish the extent to which cognitive functioning changes in response to treatment over longer periods of time and whether recovery can be predicted.

Materials and methods

One hundred patients with a diagnosis of NPH were assessed using a short but carefully designed neuropsychological battery that measured key components of memory and executive function. All patients were also assessed by a nurse practitioner for relevant physical function including continence and mobility. Patients also completed a self-rating depression scale.

Results

We show that in a population of 100 patients diagnosed with NPH, there is a group with a characteristic neuropsychological profile of relatively intact global functioning and impaired fronto-striatal function. We also show that in a longitudinal study of 25 patients who have had shunts inserted, there is clear improvement in memory function for a significant proportion of patients but little improvement in executive functioning. In some cases improvement is very rapid, whilst in others it may take 18 months or more, and in patients with mixed pathology long-term outcome is not always positive. Finally we report three case studies: one with dramatic and immediate improvement; one with significant but considerably slower improvement and one where there is no improvement at all.

Conclusion

A characteristic profile of cognitive impairments can be observed in NPH, using a short and easily administered neuropsychological battery. In a large proportion of cases, shunt treatment leads to notable improvement in cognitive function though this may sometimes take over a year. Pre-shunt scores on the cognitive tasks and other measures of physical function may aid the prediction of timing and extent of recovery.